

CLEAN VERSION OF ALL CLAIMS

In accordance with 37 CFR 1.121(c)(3), the following is a clean version of the Claims, as rewritten by the foregoing amendments.

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1. A method for rapidly screening volatile substances in a sample, said method comprising the steps of:

- a) introducing a volume of said sample into a vapor delivery line;
- b) volatilizing at least a portion of said volume as said volume is carried
10 through said vapor delivery line;
- c) contacting at least a portion of said volatilized volume with a sensor element, wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and
- d) monitoring a signal from said sensor element wherein said signal
15 comprises the response of said sensor to a temporally-determined variation in the concentration of said vapor at said sensor surface.

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2. The method of claim 1, wherein said sensor element is an optical sensor element.

3. The method of claim 1, wherein said sensor element is an electrochemical sensor element.

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4. The method of claim 1, wherein said sensor element comprises a semiconductor.

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5. The method of claim 1, wherein said sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of said sensor element.

6. The method of claim 1, wherein said sensor element comprises a quartz crystal.

7. The method of claim 5, wherein said sensor element is coated with a hard-
5 soft block elastomer.

8. The method of claim 7, wherein said sensor element is coated with a silicone polyimide.

10 9. The method of claim 7, wherein said sensor element is coated with a block dimethylsiloxane-carbonate copolymer.

10. The method of claim 5, wherein said sensor element is coated with an amorphous fluoropolymer.

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11. The method of claim 10, wherein said sensor element is coated with a random copolymer of tetrafluoroethylene and perfluoro-2,2-dimethyl-1,3-dioxole.

12. The method of claim 1, wherein step c) comprises contacting at least a
20 portion of said volatilized volume with an array of sensor elements.

13. The method of claim 1, wherein said volume is carried through said vapor delivery line by an inert carrier gas.

25 14. The method of claim 13, wherein said inert carrier gas is flowing through said vapor delivery line at a rate of between about 1 mL/min and about 1000 mL/min.

15. The method of claim 14, wherein said inert carrier gas is flowing through said vapor delivery line at a rate of between about 150 mL/min and about 500 mL/min.

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16. The method of claim 5, wherein said signal from said sensor element represents a measured property of said chemically sensitive film.

17. The method of claim 1, wherein said signal from said sensor element is
5 monitored as a function of time.

18. The method of claim 17, wherein said signal is monitored with at least one frequency counter to produce data.

10 19. The method of claim 18, wherein said data are stored in a computer.

20. The method of claim 1, further comprising the step of controlling the flow of said inert carrier gas through said vapor delivery line with flow controllers in communication with a computer.

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21. A method for rapidly screening volatile substances in a sample, said method comprising the steps of:

- a) introducing a volume of said sample into a vapor delivery line;
- b) volatilizing at least a portion of said volume as said volume is carried
20 through said vapor delivery line;
- c) contacting at least a portion of said volatilized volume with a sensor element comprising a quartz crystal and a chemically sensitive film proximate the surface of said crystal, wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and
- 25 d) monitoring a measured property of said chemically sensitive film as a function of time.

37. (Amended) A method for rapidly screening volatile substances in a sample, the method comprising the steps of:

- 30 a) introducing a volume of said sample into a vapor delivery line;
- b) volatilizing at least a portion of said volume as said volume is

carried through said vapor delivery line;

c) contacting at least a portion of said volatilized volume with a sensor element, wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and

5 d) monitoring a signal from said sensor element as a function of time.

38. The method of claim 37, wherein said volume is carried through said vapor delivery line by an analyte-free carrier gas.

10 39. The method of claim 38, further comprising the step of controlling the flow of said analyte-free carrier through said vapor delivery line with flow controllers in communication with a computer.

40. The method of claim 37, further comprising purging the system to remove
15 any remaining analyte vapors prior to introduction of a second sample into said vapor delivery line.

41. The method of claim 37, wherein the sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of
20 the sensor element.

42. The method of claim 37, wherein said sensor comprises a quartz crystal.

43. The method of claim 37, wherein step (c) comprises contacting at least a
25 portion of said volatilized volume with an array of sensor elements.

44. The method of claim 37, wherein said sensor element is an optical element.

30 45. The method of claim 37, wherein said sensor element is an electrochemical element.